

## DOOR STATE CONTROLLER

### FIELD OF THE INVENTION

The present invention relates to doors, and more particular to a door  
5 state controller having a receiving space between a telescopic rod  
cylinder and a stopper. The receiving space serves to receive a resisting  
sheet and a resilient spring so that the resisting sheet will not move by  
mistake. Thus the angle about the opening of the door is controlled  
precisely.

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### BACKGROUND OF THE INVENTION

The door state controller is a device for controlling the door  
opening state so that the door is controlled in an open state, but not  
close automatically or in an open state, while close automatically.

15 With reference to Figs. 1 and 2, the door state controller comprises  
an elastic telescopic cylinder 1. The telescopic cylinder 1 has a  
telescopic rod 2. The telescopic rod 2 will extend out as a pull force is  
acted thereon, and will return to an original position by an internal  
resilient force as the pull force disappears. The telescopic rod 2 has a  
20 resisting sheet 3. The resisting sheet 3 has a control sheet 4 and a via  
hole 5. In use, the telescopic cylinder 1 is fixed to a doorframe 8 and  
a doorplate 9 using a doorframe positioning seat 6 and a doorplate  
positioning seat 7 at two sides.

In operation in a state of closing door automatically without setting  
25 the door opening angle, referring to Fig. 2A, the door (illustrated by

dashed lines) is opened, the telescopic rod 2 of the telescopic cylinder 1 is prolonged. After persons pass through the door, if no force is acted to the doorplate 9, the doorplate 9 closes by the resilient force of the telescopic rod 2. When it is desired to retained the door in an opening state, with reference to Fig. 2B and Fig. 2C, the control sheet 4 is controlled by a finger so that the resisting sheet 3 slides to a desired angle. The telescopic cylinder 1 will extends to a position set by the resisting sheet 3. One end of the telescopic cylinder 1 will resist against the control sheet 4 so that the resisting sheet 3 generates a slop angle  $\theta$ . The resisting sheet 3 has an effect of stopping so that the telescopic cylinder 1 and telescopic rod 2 will not resilient and thus retain to the extend lengths so as to retain in the state shown in Fig. 2B, namely, the door retains in an open state. Moreover, when desire to release the door plate to return to a state of closing door automatically, the control sheet 4 is controlled by fingers so that the resisting sheet 3 will not inclined further (to be vertical to the telescopic rod 2). Thereby, the telescopic cylinder 1 can move forwards so that the telescopic rod 2 is reduced into the telescopic cylinder 1. Although above mentioned prior art can control the door opening angle so that the door can return to the effect of auto closing effect. However, the prior art has the following defect:

1. When the resisting sheet 3 is set to have a desired opening angle, the resisting sheet 3 slides by finger. The operation is inconvenient.
2. When the setting is released, the door is returned to an

auto-closing state, the resisting sheet 3 must be slid to the distal end (the doorframe positioning seat 6, as shown in Fig. 2A). The operation is inconvenient.

3. The setting and releasing of the resisting sheet 3 must be executed by hands. However, at this moment, the telescopic cylinder 1 has a telescopic pull force, it is often that the telescopic cylinder 1 will move toward to the resisting sheet 3 so as to clamp and hurt the finger (since the finger is positioned on the control sheet 4 and thus the telescopic cylinder 1 resists against the control sheet 4).

4. Since the resisting sheet 3 is not confined, when the setting is released, the sliding of the resisting sheet 3 will have some error so that door is not closed completely.

## SUMMARY OF THE INVENTION

Accordingly, the primary object of the present invention is to provide a door state controller having a receiving space between a telescopic rod cylinder and a stopper. The receiving space serves to receive a resisting sheet and a resilient spring so that the resisting sheet will not move by mistake. Thus the angle about the opening of the door is controlled precisely.

Another object of the present invention is to provide a door state controller the operations of setting the angle of the opening of the door and of releasing the setting state can be performed rapidly.

To achieve above objects, the present invention provides a door state controller. The controller comprises an elastic telescopic

cylinder; a telescopic rod in the telescopic cylinder; a resisting sheet located on the telescopic rod in the telescopic cylinder; the resisting sheet having a control sheet and a via hole and the telescopic rod passing through the telescopic rod; an extension sheet with a stopper being at one end of the telescopic cylinder; a receiving space being between the stopper and the telescopic cylinder; the resisting sheet being installed in the receiving space; and a resilient spring being installed between the resisting sheet and the telescopic cylinder; thereby, the resisting sheet being confined in the resisting sheet by the stopper without sliding by mistake; and the resilient spring being capable of restoring the resisting sheet. By using the control sheet, stopper and resilient spring, the state of opening a door is determined or the door is set as an auto-close state.

The various objects and advantages of the present invention will be more readily understood from the following detailed description when read in conjunction with the appended drawing.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

Fig. 1 is perspective view of a prior art.

Fig. 2 shows the use of the prior art, where (A) shows the operation of auto-close door; (B) shows the positioning of a door; (C) shows the operation of setting the angle of opening a door.

Fig. 3 is a partial cross sectional view of the present invention.

Fig. 4 show the uses of the present invention, where (A) shows the operation of positioning; (B) shows the operation of auto-close and (C)

shows the front schematic view of adjustment of positioning.

## DETAILED DESCRIPTION OF THE INVENTION

In order that those skilled in the art can further understand the present invention, a description will be described in the following in details. However, these descriptions and the appended drawings are only used to cause those skilled in the art to understand the objects, features, and characteristics of the present invention, but not to be used to confine the scope and spirit of the present invention defined in the appended claims.

With reference to Figs. 3 and 4, the door state controller comprises an elastic telescopic cylinder 1.

The telescopic cylinder 1 has a telescopic rod 2. The telescopic rod 2 has a resisting sheet 30. The resisting sheet 30 has a control sheet 31 and a via hole. The telescopic cylinder 1 is fixed to a doorframe 6 and a doorplate (as those shown in Fig. 2) using a doorframe positioning seat 6 and a doorplate positioning seat 70 at two sides.

An extension sheet 10 with a stopper 11 is at one end of the telescopic cylinder 1. A receiving space H is formed between the stopper 11 and the telescopic cylinder 1. The resisting sheet 30 is installed in the receiving space H.

A resilient spring 20 is installed between the resisting sheet 30 and the telescopic cylinder 1. Thereby, the resisting sheet 30 is confined in the resisting sheet 3 by the stopper 11 without sliding by mistake; and

the resilient spring 20 is capable of restoring the resisting sheet 30 to be in a vertical state.

The uses, effects and advantages of the present invention will be described herein.

5 With reference to Fig. 4A, an operation of the present invention is illustrated, where the present invention is used as a position for setting an opening angle to a door. The control sheet 31 is controlled so that the third thread 13 to be in a tilt angle. The end of the telescopic cylinder 1 resists against the control sheet 31 so that the resisting sheet  
10 30 is in a tilting state due to being buckled by the telescopic cylinder 1 and the resilient spring 20 is compressed at one side. Therefore, the telescopic cylinder 1 and telescopic rod 2 will not be compressed to reduce the length. The doorplate is retained at the angle. When it is desired to release the setting so that the door can be closed  
15 automatically, as shown in Figs. 4B, the resisting sheet 30 is pushed away slightly so that the telescopic cylinder 1 moves away slightly so as not to resist against the control sheet 31. The resisting sheet 30 will be pushed away by the resilient force of the resilient spring 20 to resist against the stopper 11. By the resilient force of the resilient spring 20,  
20 the resisting sheet 30 is retained at that state without inclination. Thus the telescopic cylinder 1 and telescopic rod 2 can telescopically move freely. After one passes through the door, the door closes automatically. When it is desired to set the opening of the door, it is only necessary to set the resisting sheet 30 to be inclined by controlling  
25 the control sheet 31 using fingers. Thereby, the control sheet 31 can

stop the telescopic rod 2 to be at that position.

Advantages of the present invention will be described here.

It is only necessary to control the orientation of the control sheet 31 by fingers, the angle of the door can be set. By the resilient force of the resilient spring 20, the control sheet 31 will not be buckled. Thereby, the user of the present invention is very convenient.

When it is desired to set the door at a predetermined opening, it is only necessary to set the control sheet 31 in a tilt angle so that the control sheet 4 is buckled. Thus the use of the present invention is very convenient.

Since the resilient spring 20 is used to resist against the resisting sheet 30 by the elastic force thereof, the resisting sheet 30 is controlled rapidly. It is unnecessary to the control the resisting sheet 30 by fingers for a longer time. Thus the fingers will not be clamped by mistake and thus is hurt.

The control sheet 31 is confined within the receiving space H. The control sheet 31 is controlled by the elastic force of the resilient spring 20. Thereby, the resisting sheet 3 will not slide by mistake. Thus the operation of "auto-closing" and "retaining in a set angle" can be performed.

The present invention is thus described, it will be obvious that the same may be varied in many ways. Such variations are not to be regarded as a departure from the spirit and scope of the present invention, and all such modifications as would be obvious to one skilled in the art are intended to be included within the scope of the following